MOTOR VEHICLE MANUFACTURERS ASSOCIATION OF the UNITED STATES, INC., et al., Petitioners,

v.

ENVIRONMENTAL PROTECTION AGENCY, Respondent,

American Methyl Corporation, Intervenor.

GENERAL MOTORS CORPORATION, Petitioner,

v.

ENVIRONMENTAL PROTECTION AGENCY, Respondent,

American Methyl Corporation, Intervenor.

Nos. 81-2276, 81-2279.

United States Court of Appeals, District of Columbia Circuit.

Argued May 14, 1985.

Decided July 26, 1985.

Corporation which had been granted waiver to market new methol-gasoline blend filed petition for review of order of the Environmental Protection Agency. The Court of Appeals, Wilkey, Circuit Judge, 749 F.2d 826, reversed and remanded. A petition was thereafter filed for another review of an order of the EPA which granted waiver. The Court of Appeals, Wald, Circuit Judge, held that decision of EPA to grant waiver of Clean Air Act's restrictions on new fuels or fuel additives for new methol-gasoline blend fuel was arbitrary, capricious, and an abuse of discretion.

Vacated and remanded.

1. **Administrative Law and Procedure ⇐763**

Under Court of Appeals' review of administrative action under arbitrary and capricious standard, it must engage in searching and careful review of both facts and agency's reasoning to ensure that agency's decision was the product of reasoned decision-making based upon consideration of relevant factors.

2. **Statutes ⇐181(1)**

With respect to issues of statutory construction, if Congress' intent can be ascertained from plain language of statute or its legislative history, then that intent must be given effect.

3. **Statutes ⇐219(1)**

If the Court of Appeals determines that Congress has not directly addressed question at issue in statute, then question for court in determining whether agency action based on statute is permissible is whether agency's answer was based on permissible construction of statute.

4. **Health and Environment ⇐25.6(6)**

Under statute [Clean Air Act, § 211(f)(4), as amended, 42 U.S.C.A. § 7545(f)(4)] allowing administrator of Environmental Protection Agency to waive restrictions on new fuels or fuel additives, EPA is not required to determine that fuel will not cause or contribute to any increase in emissions; rather, statute only requires that fuel will not cause or contribute to increase emissions which exceeds applicable emissions standards.

5. **Health and Environment ⇐25.6(6)**

Given statute [Clean Air Act, § 211(f)(4), as amended, 42 U.S.C.A. § 7545(f)(4)] requiring that the Environmental Protection Agency determine that a fuel will not cause or contribute to failure of emission device to comply with applicable emissions standards during vehicle's useful life, as defined in another statute [Clean Air Act, § 202(d), as amended, 42 U.S.C.A. § 7521(d)] as 50,000 miles, EPA must have clearly found basis for determining in given case that back-to-back testing provides adequate and sufficient means of evaluation in lieu of actual 50,000-mile testing.

6. **Health and Environment ⇐25.6(6)**

The Environmental Protection Agency abused its discretion in determining that a

new methol-gasoline blend would not cause a vehicle to exceed emission standards over its useful life in violation of the Clean Air Act [Clean Air Act, § 211(f)(4), as amended, 42 U.S.C.A. § 7545(f)(4)] given fact that the EPA lacked any rational basis for concluding that the fuel would not cause or contribute to vehicle's failure to comply with emission standards over useful life.

7. Health and Environment ⇐25.6(6)

Environmental Protection Agency decisions to waive other fuel additives into commerce could not be construed to provide reasonable basis for EPA's conclusion that new methol-gasoline blend could also be granted waiver on basis that the fuel had only instantaneous and not deteriorative effects since effectiveness of additives of preventing any potential deteriorative effects resulting from use of methanol blend fuel similar to the new fuel was neither at issue nor established by the three other waiver decisions. Clean Air Act, § 211(f)(1), as amended, 42 U.S.C.A. § 7545(f)(1).

8. Health and Environment ⇐25.6(6)

The administrator of the Environmental Protection Agency acted arbitrarily, capriciously, and abused her discretion in granting corporation waiver to market new methol-gasoline blend despite failure of new fuel to pass deteriorated emissions test for emissions. Clean Air Act, § 211(f)(4), as amended, 42 U.S.C.A. § 7545(f)(4).

9. Health and Environment ⇐25.6(6)

Action of administrator of Environmental Protection Agency in applying to specific case of waiver of new fuel marketing assumption that fuel volatility restrictions would adequately control evaporative emission increases was not arbitrary or capricious. Clean Air Act, § 211(f)(4), as amended, 42 U.S.C.A. § 7545(f)(4).

Petitions for Review of an Order of the Environmental Protection Agency.

Gary P. Toth, Detroit, Mich., with whom William H. Crabtree, V. Mark Slywynsky, Michael W. Grice, Detroit, Mich., Robert G. Seasonwein, Troy, Mich., and William L. Weber, Jr., Detroit, Mich., were on brief, for petitioners in Nos. 81-2276 and 81-2279.

David E. Dearing, Atty., Dept. of Justice, Washington, D.C., with whom Samuel I. Gutter, Robert A. Weissman, Attys., A. James Barnes, Gen. Counsel, Gerald K. Gleason, Asst. Gen. Counsel, E.P.A. and Jose R. Allen, Atty., Dept. of Justice, Washington, D.C., were on brief, for respondents in Nos. 81-2276 and 81-2279. Nancy Marvel and Ralph Colleli, Jr., Washington, D.C., entered appearances, for respondents in Nos. 81-2276 and 81-2279.

James W. Moorman, Washington, D.C., with whom Scott N. Stone, Russell V. Randle and David B. Robinson, Washington, D.C., were on brief, for intervenor American Methyl Corp. Arnold B. Podgorsky and Laurence S. Kirsch, Washington, D.C., entered appearances, for intervenor in Nos. 81-2276 and 81-2279.

V. Peter Wynne, was on brief, for Atlantic Richfield Co., amicus curiae, urging reversal in Nos. 81-2276 and 81-2279.

Milton D. Andrews and Lance E. Tunick, Washington, D.C., were on brief for Auto. Importers of America, Inc., amicus curiae, urging reversal in Nos. 81-2276 and 81-2279.

Before TAMM, WALD and MIKVA, Circuit Judges.

Opinion for the Court filed by Circuit Judge WALD.

WALD, Circuit Judge.

Petitioners [1] seek review of a decision of the Administrator of the Environmental

1. The Motor Vehicle Manufacturers Association of the United States, Inc. ("MVMA"), American Motors Corporation, Chrysler Corporation, General Motors Corporation ("GM" or "General Motors") and Volkswagen of America, Inc. are jointly prosecuting the petition for review in No. 81-2276. General Motors is the petitioner in the consolidated action, No. 81-2279. MVMA is

Protection Agency (the "Administrator" or the "EPA") to grant a waiver of the Clean Air Act's (the "Act") restrictions on new fuels or fuel additives, *see* 42 U.S.C. § 7545(f)(4), to American Methyl Corporation [2] for a proprietary fuel known as Petrocoal. Finding that the EPA's decision to grant the waiver was arbitrary, capricious and an abuse of discretion, we vacate the Petrocoal waiver and remand to the agency for further proceedings consistent with this opinion.

I. Background

Since this court has already had occasion to set forth the background of this case in *American Methyl Corp. v. EPA*, 749 F.2d 826 (D.C.Cir.1984), we present here only a brief synopsis of that background, highlighting the facts particularly relevant to the present petition. The statutory provision at issue is section 211(f) of the Clean Air Act which places substantial restrictions on new fuels or fuel additives (collectively referred to as "fuel"). Specifically section 211(f)(1) makes it

> ... unlawful for any manufacturer ... to first introduce into commerce, or to increase the concentration in use of, any fuel or fuel additive for general use in light duty motor vehicles ... which is not substantially similar to any fuel or fuel additive utilized in the certification of any ... [1975 or later model year vehicle or engine].

42 U.S.C. § 7545(f)(1).[3] Section 211(f)(4), however, allows the Administrator to waive this prohibition in specified circumstances:

> The Administrator, upon application of any manufacturer ... may waive the prohibitions established ... if he determines that the applicant has established that such fuel or fuel additive or a specified concentration thereof, and the emission products of such fuel or additive or specified concentration thereof, will not cause or contribute to a failure of any emission control device or system (over the useful life of any vehicle in which such device or system is used) to achieve compliance by the vehicle with the emission standards with respect to which it has been certified pursuant to section 7525 of this title.

42 U.S.C. § 7545(f)(4).

On February 20, 1981, American Methyl applied for a section 211(f)(4) waiver for a methanol/gasoline blend fuel called Petrocoal. EPA published a public notice on April 13, 1981, acknowledging receipt of the application and soliciting comments on whether Petrocoal met the waiver criteria. *See* 46 Fed.Reg. 21,695 (1981), Joint Appendix ("J.A.") at 79. Under section 211(f)(4), a waiver is treated as granted if the Administrator fails to grant or deny the application within 180 days of its receipt. 42 U.S.C. § 7545(f)(4).[4] By mutual consent of

a trade association of automobile manufacturers. The petitioners are collectively referred to in this opinion as "petitioners" or "MVMA." Atlantic Richfield Company ("ARCO") and Automobile Importers of America, Inc. ("AIA") filed *amici curiae* briefs in support of the petitioners.

2. American Methyl Corporation is an intervenor in this case on the side of the EPA. At the time of the waiver decision and up until June 30, 1982, American Methyl was incorporated under the name Anafuel Unlimited. We refer to the corporation by its current name, American Methyl.

3. "Certification" refers to the process of testing and issuance of a certificate of conformity required by section 206(a) of the Act, 42 U.S.C. § 7525(a), whereby manufacturers must demonstrate, under carefully controlled procedures, that their vehicles, or any engine or emission control system incorporated therein, conform with the applicable emissions standards prescribed in 42 U.S.C. § 7521.

4. Intervenor American Methyl argues that the provision that a waiver is automatically granted if the Administrator fails to act within 180 days indicates that Congress intended a lenient burden of proof under section 211(f)(4) and that we should accord special deference to the Administrator's decision. *See* Brief for American Methyl at 25, 27–29. Section 211(f)(4), however, establishes a clear burden on the waiver applicant to establish that the new fuel will not cause or contribute to the failure of any emission control device to achieve compliance with emission standards over the useful life of a vehicle. *See infra* pp. 390–91. Neither the Act nor its legislative history indicates how Congress intended us to reconcile the clear burden placed on the waiver applicant to qualify for a waiver

the EPA and American Methyl, this 180-day review period, scheduled to expire on August 19, 1981, was extended, *see* 46 Fed. Reg. 43,082 (Aug. 26, 1981) (30 day extension) and 46 Fed.Reg. 47,299 (Sept. 25, 1981) (10 day extension), until September 28, 1981, when EPA granted a conditional waiver for Petrocoal. *See* Petrocoal Waiver, 46 Fed.Reg. 48,975 (Oct. 5, 1981). The Administrator [5] determined that American Methyl had met the burden necessary to establish its eligibility for a waiver for Petrocoal under section 211(f)(4) provided that the finished fuel met the following conditions:

> [T]he concentration of methanol ... does not exceed 12 percent, by volume, the concentration of total alcohols in the fuel does not exceed 15 percent, by volume, the ratio of methanol to four-carbon alcohols in the finished fuel does not exceed 6.5 to 1, by volume and the finished fuel is blended such that it meets the American Society for Testing and Materials (ASTM) fuel volatility specifications for the area and time of year in which it is sold.

Id. at 48,976.

On December 4, 1981, MVMA filed both a petition for administrative reconsideration of the waiver by the EPA and the present petition for judicial review of the waiver by this court. The EPA did not act on MVMA's petition for administrative reconsideration. On February 22, 1983, MVMA filed a supplemental petition for reconsideration supported by new data which purportedly contradicted one of the EPA's basic assumptions in granting the waiver—namely that increased evaporative emissions due to the use of Petrocoal could be controlled by controlling the volatility of the blended fuel. This supplemental petition together with the new data submitted prompted the EPA to reconsider the waiver grant, *see* 48 Fed.Reg. 19,779, 19,780 (1983) (notice and request for comments on petition for reconsideration), and to a proposed revocation of the waiver. *See* 49 Fed.Reg. 11,879, 11,885 (1984) (notice of reconsideration and proposed revocation of Petrocoal waiver). Coincidentally with the EPA's publication of the proposed notice of revocation, the parties to the pending petition for judicial review of the waiver grant jointly moved to remand the record to the EPA for further administrative proceedings. This court granted that motion on April 3, 1984.

A month later on May 3, 1984, however, American Methyl formally requested the EPA to terminate the revocation proceeding on the ground that section 211(f) did not authorize the EPA to revoke a waiver. The EPA's General Counsel denied this request in a letter ruling dated June 8, 1984. American Methyl petitioned this court for judicial review of both the notice of proposed revocation and the letter ruling. On July 27, 1984, this court granted American Methyl's motion to stay the EPA's proposed revocation proceeding. On the merits, this court held that the EPA may not revoke a waiver pursuant to section 211(f), but may forbid the marketing of Petrocoal pursuant to section 211(c) which grants the Administrator the authority to regulate fuels or fuel additives. *American Methyl*, 749 F.2d at 828. The case was remanded to the EPA for further proceedings pursuant to section 211(c). To date, the EPA has not initiated a proceeding to regulate Petrocoal under section 211(c).

Following this court's remand to the EPA for further proceedings pursuant to section 211(c), MVMA moved the court to order the return of the record on its peti-

grant and the automatic granting of a waiver in the absence of action by the Administrator within 180 days. We find it most plausible to construe the 180-day limitation as a means of ensuring prompt administrative action on waiver applications; hence, we reject American Methyl's assertion that it has any bearing on the applicant's burden of proof. We also note that the 180-day period in no way limits the time an applicant has to conduct tests and compile the necessary information to qualify for a waiver *prior* to filing an application.

5. The waiver was actually signed by the Acting Administrator John W. Hernandez not the then current Administrator Anne M. Gorsuch. For ease of reference we will refer to the Administrator on whose behalf the waiver was granted.

tion for review of the original waiver decision and to hear oral argument. The court granted the motion on February 13, 1985, and oral argument was heard on May 14, 1985.

The principal issue presented in this case is the reasonableness of the EPA's determination that American Methyl sufficiently established that Petrocoal met the criteria to qualify for a waiver under section 211(f)(4). This challenge to the grant of the Petrocoal waiver, however, has raised two initial questions of statutory construction related to the showing an applicant must make in order to qualify for a section 211(f)(4) waiver. Specifically, the statutory questions are: (1) Does section 211(f)(4) require the EPA to determine that a fuel will not cause or contribute to *any* increase in emissions or only that it will not cause or contribute to an increase which exceeds applicable emission standards; and (2) Does section 211(f)(4) oblige the EPA to require applicants to submit emission data on vehicles tested over a 50,000-mile period or may the EPA evaluate the long-term effects of a new fuel on the basis of reasoned technical judgments?

II. Statutory Construction Questions

[1–3] This court in reviewing the EPA's construction and implementation of the terms of section 211(f)(4) may reverse the agency's action only if it is outside the bounds of its statutory authority, *see American Methyl*, 749 F.2d at 833 (citing section 307(d)(9)(C) of the Clean Air Act, 42 U.S.C. § 7607(d)(9)(C)), or if it is arbitrary, capricious, or an abuse of discretion.[6] With respect to issues of statutory construction, if Congress' intent can be ascertained from the plain language of the statute or its legislative history then that intent must be given effect. *See Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, — U.S. —, 104 S.Ct. 2778, 2782 n. 9, 81 L.Ed.2d 694 (1984). If, on the other hand, the court determines that Congress has not directly addressed the question at issue, then "the question for the court is whether the agency's answer is based on a permissible construction of the statute." *Id.*, 104 S.Ct. at 2782. With these precepts in mind, we turn to the statutory questions of whether section 211(f)(4) compels the Administrator to deny a waiver application if the fuel causes *any* increase in emissions and to require the applicant to submit 50,000-mile durability data.

A. *Requisite Finding With Respect to Emission Increases*

The EPA contends that to grant a waiver under section 211(f)(4), the Administrator is required only to determine that the fuel will not cause vehicles to exceed applicable emission standards. Brief for EPA at 9. The EPA makes this argument in response to MVMA's and *amicus* AIA's assertions that Congress intended section 211(f)(4) to preclude the grant of a waiver if the fuel caused *any* increase in emissions. *See* Brief for MVMA at 30, 43; Brief for AIA

6. Intervenor American Methyl argues that section 307(d)(9), 42 U.S.C. § 7607(d)(9), governs our review in this case, whereas MVMA argues that the Administrative Procedure Act, 5 U.S.C. § 706, governs. While not expressly addressing the issue, this court in *American Methyl*, 749 F.2d at 833, apparently construed section 307(d)(9) of the Clean Air Act to govern review of the EPA's actions pursuant to section 211(f). We find it unnecessary to decide this issue here since the standard we apply (i.e., whether the EPA's actions were in excess of statutory authority or arbitrary and capricious) is the same under either Act. *See Small Refiners Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 519 (D.C.Cir.1983) (the standard for substantive judicial review under the Clean Air Act is taken directly from the Administrative Procedure Act). The scope of our review under the arbitrary and capricious standard is well established. We must engage in a "searching and careful" review of both the facts and the agency's reasoning to ensure that the agency's decision was a product of reasoned decisionmaking based upon a consideration of the relevant factors. *Id.* at 520 (citing *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416, 91 S.Ct. 814, 823, 28 L.Ed.2d 136 (1971); *Ethyl Corp. v. EPA*, 541 F.2d 1, 35 (D.C.Cir.) (en banc), *cert. denied*, 426 U.S. 941, 96 S.Ct. 2662, 49 L.Ed.2d 394 (1976)); *see also Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43, 103 S.Ct. 2856, 2867, 77 L.Ed.2d 443 (1983) (Agency must "articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" (quoting *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168, 83 S.Ct. 239, 246, 9 L.Ed.2d 207 (1962)).

at 19–22; *but see* Brief for MVMA at 26, 45 (referring to *any increase* which causes or contributes to a vehicle's *failure* to meet emission standards). AIA contends that the Act's language stating that a waiver must be denied if a fuel "contributes" to a failure to achieve compliance with emission standards "means that a waiver must be denied if the subject fuel causes *any* increase in emissions." Brief for AIA at 20 (emphasis in original); *see also* Reply Brief for MVMA at 12–13. We note at the outset that the decision whether to grant a waiver is committed to the discretion of the Administrator. *See* 42 U.S.C. § 7545(f)(4) ("The Administrator ... *may* waive the prohibitions ...") (emphasis added). Thus, the question is not whether the Administrator *may* deny a waiver on the basis of an increase in emissions not amounting to a failure to meet emission standards, but whether section 211(f)(4) mandates that the Administrator *must* deny a waiver if a fuel causes *any* increase in emissions.

[4] The plain language of section 211(f)(4) refers not to *any increase* in emissions but to "a *failure* of any emission control device or system ... to achieve compliance ... with the [applicable] emissions standards...." 42 U.S.C. § 7545(f)(4). Section 211(f)(4) was added to the Clean Air Act in 1977. *See* Clean Air Act Amendments of 1977, Pub.L. No. 95–95, § 222, 91 Stat. 685, 763–64.[7] The Senate version of section 211(f)(4), relied upon by AIA, would have required a waiver applicant to establish that the fuel did not *impair* emission performance. *See* S.Rep. No. 127, 95th Cong., 1st Sess. 90–91 (1977). The conferees, however, rejected the Senate version, and in adopting the current language of section 211(f)(4) stated:

> Thus, if a fuel or fuel additive causes an increase in engine emissions so as to increase tail pipe emissions or interferes with performance of a specific device or element of emission control *so as to cause or contribute to the vehicle's failure to meet the standards at any point in its useful life, the Administrator could not waive the prohibition.*

H.R.Conf.Rep. No. 564, 95th Cong., 1st Sess. 161 (1977), U.S.Code Cong. & Admin. News 1977, pp. 1077, 1542 (emphasis added). Thus we find that both the plain language of the Act and its legislative history support the EPA's view that the Administrator is not required under section 211(f)(4) to adopt a "no increase" standard and may grant a waiver as long as the fuel does not cause or contribute to a failure to achieve compliance with emission standards. *Cf. Specialty Equip. Mkt. Ass'n v. Ruckelshaus*, 720 F.2d 124, 133–34 (D.C. Cir.1983) (rejecting MVMA's contention that section 207(a)(2) of the Act required a "no-increase" standard with respect to the certification of aftermarket parts).

B. *50,000-Mile Durability Testing*

Section 211(f)(4) provides that, to qualify for a waiver, an applicant must establish that the fuel "will not cause or contribute to a failure of any emission control device or system (*over the useful life of any vehicle in which such device or system is used*) to achieve compliance by the vehicle with the [applicable] emission standards." 42 U.S.C. § 7545(f)(4) (emphasis added). The Conference Report states that a waiver

7. The Senate Committee in 1977 received testimony that a certain fuel additive, MMT, "was impairing the performance of emission control systems and increasing hydrocarbon emissions in test vehicles." S.Rep. No. 127, 95th Cong., 1st Sess. 90 (1977). The Committee was concerned that existing section 211(c), which allows the Administrator to control or prohibit fuels by regulation, could not adequately protect emissions systems currently in use from the possible deterioration caused by MMT, or other new fuels or additives, due to the delay associated with the procedural safeguards required in section 211(c) proceedings. *Id.* As a result, the Committee proposed and Congress ultimately enacted section 211(f) banning new fuels or fuel additives not substantially similar to those utilized in the certification of any 1975 or later model year vehicle or engine. The Senate Committee proposed including the waiver provision found in section 211(f)(4) because "[t]he committee was concerned with the increased use of crude oil that would be necessitated by the prohibition in use of MMT or other octane raising agents, and the smaller refineries that would be adversely affected by these provisions when lead phase-down requirements were taken into account." *Id.* at 91.

could not be granted if the fuel caused or contributed to the "vehicle's failure to meet the standards *at any point* in its useful life." H.R.Conf.Rep. No. 564, 95th Cong., 1st Sess. 161 (1977), U.S.Code Cong. & Admin.News 1977, p. 1542 (emphasis added); *see supra* p. 390 (quoting passage in full). Section 202(d), 42 U.S.C. § 7521(d), defines the "useful life" of a vehicle as five years or 50,000 miles, whichever occurs first. Petitioners argue that both the language of section 211(f)(4) and its legislative history clearly indicate that an applicant must submit data which measure the fuel's effect on emissions over the "useful life" of the vehicle (*i.e.*, 50,000-mile durability testing).[8] *See* Brief for MVMA at 27–30, 37–41. Thus petitioners claim that the EPA erred in granting the Petrocoal waiver in the absence of 50,000-mile durability data.

The EPA, however, has established a practice of not requiring 50,000-mile durability testing where it determines that the emissions effect of the fuel is of an instantaneous, not deteriorative, nature. *See* Oxinal Waiver, 44 Fed.Reg. 37,074 (1979); MTBE Waiver, 44 Fed.Reg. 12,242 (1979); TBA Waiver, 44 Fed.Reg. 10,530 (1979). Instead the EPA requires only "back-to-back" testing.[9] This practice is predicated upon EPA's general interpretation of the burden of proof required of an applicant under section 211(f)(4). Specifically, the EPA states:

> This burden, which Congress has imposed on the applicant, if interpreted literally, is virtually impossible to meet as it requires proof of a negative proposition, *i.e.*, that no vehicle will fail to meet emission standards with respect to which it has been certified. Taken literally, it would require the testing of every vehicle. Recognizing that Congress contemplated a workable waiver provision, mitigation of this stringent burden was deemed necessary. For purposes of the waiver provision, EPA has previously indicated that reliable statistical sampling and fleet testing protocols may be used to demonstrate that a fuel under consideration would not cause or contribute to a significant failure of emission standards by vehicles in the national fleet.

Petrocoal Waiver, 46 Fed.Reg. at 48,976; TBA Waiver, 44 Fed.Reg. at 10,530. Having determined that sample testing of vehicles is an appropriate method for establishing that a fuel qualifies for a waiver under section 211(f)(4), the EPA then further considered which specific testing methods were appropriate in given cases. The EPA concluded that back-to-back testing and statistical projections are sufficient where a fuel is predicated to have only instantaneous effects, *see supra* note 9, and that 50,000-mile durability testing is only required where a fuel is predicated to have long-term deteriorative effects. *See, e.g.*, Petrocoal Waiver, 46 Fed.Reg. at 48,-

8. Conducting 50,000-mile durability testing involves operating a matched set of vehicles for 50,000 miles and performing emissions tests on each vehicle at 5,000-mile intervals. This is essentially the same testing method required of automobile manufacturers to obtain new motor vehicle certification under section 206 of the Act. *See* Petrocoal Waiver, 46 Fed.Reg. at 48,-976 n. 7; *see also supra* note 3 (defining "certification").

9. If a fuel is predicted to have only an instantaneous effect on emissions then the fuel is predicted to cause an immediate, incremental shift in the emission levels relative to a base fuel and this shift is predicted to remain constant throughout the useful life of the vehicle. "Back-to-back" emission testing is considered by the EPA to be sufficient where only instantaneous effects are predicted. Back-to-back emission testing refers to the testing of a vehicle on a base fuel, then testing the same vehicle on the waiver fuel. The difference in emission levels is attributed to the waiver fuel. The EPA uses three statistical tests to evaluate the emission data provided with respect to a fuel expected to have an instantaneous emission effect: (1) the Paired Difference Test which determines the mean difference in emissions between the base fuel and the waiver fuel; (2) the Sign of the Difference Test which assesses the number of vehicles exhibiting an increase or decrease in emissions; and (3) the Deteriorated Emissions Test which indicates whether the waiver fuel will cause or contribute to a failure to meet emission standards by comparing deteriorated emissions with the emission standards in lieu of actually having 50,000-mile emission data. *See* Petrocoal Waiver, 46 Fed.Reg. at 48,976 & Appendix A (describing statistical tests).

976; TBA Waiver, 44 Fed.Reg. at 10,531. The EPA justifies this latter determination regarding the requisite testing sufficient to qualify for a section 211(f)(4) waiver on the ground that the legislative history of section 211(f)(4) indicates that the EPA in evaluating the long-term effects of a fuel is only required to take into account "the deterioration factors employed in certifying the engine." Brief for EPA at 12 (citing H.R.Conf.Rep. No. 564 at 161).[10] The EPA asserts that the statistical tests used to evaluate the emissions effect of a fuel expected to have an instantaneous effect on emissions, namely the Deteriorated Emissions Test, *see supra* note 9, takes full account of the deterioration factors used in certifying the vehicles.[11] The EPA further asserts that it may apply sound technical judgment to determine whether a fuel is expected to have an instantaneous or deteriorative effect on emissions and that, where alternative methodologies are available for evaluating the long-term effects of a fuel, nothing in the Act or its legislative history precludes the use of these alternatives to the costly and time-consuming method of actual 50,000-mile testing. *See* Brief for EPA at 13–14.

[5] We find merit in both petitioners' and the EPA's arguments on this issue. We agree with petitioners that both the language of section 211(f)(4) and its legislative history specifically provide that, for a fuel to qualify for a waiver, the EPA must determine that the fuel will not cause or contribute to a vehicle's failure to meet the applicable standards at any time during its useful life. On the other hand, we also find persuasive the EPA's argument that actual 50,000-mile durability testing may not always be required to make the requisite determination that a fuel will not cause a vehicle to exceed emission standards over its useful life. Clear evidence before the EPA may allow it to conclusively rule out the possibility of long-term, deteriorative effects, thus making the EPA's Deteriorated Emissions Test sufficient and obviating the need for actually conducting costly and time-consuming 50,000-mile durability tests.[12] Section 211(f)(4) only requires that the EPA determine that a fuel will not cause or contribute to a failure of an emission device to comply with applicable emission standards during a vehicle's useful life, it does not specify that the EPA must base this determination on actual 50,000-mile durability tests in all cases. Nonetheless, given section 211(f)(4)'s clear directive that the EPA must evaluate the effect of a fuel over the useful life of a vehicle, the EPA must have a clearly sound basis for determining in a given case that back-to-back testing provides an adequate

10. Specifically the passage relied upon by the EPA states:

> The conferees also intend that the words "cause or contribute to the failure of an emission control device or system to meet emission standards over its useful life to which it has been certified pursuant to section 206" mean the noncompliance of an engine or device with emission levels to which it was certified, taking into account the deterioration factors employed in certifying the engine.

H.R.Conf.Rep. No. 564, 95th Cong., 1st Sess. 161 (1977), U.S.Code Cong. & Admin.News 1977, p. 1542.

The EPA further contends that the term "deterioration factors" was drawn directly from the EPA's regulations, and refers to the manufacturer's projection of the amount of emissions degradation expected over a vehicle's useful life. *See* Brief for EPA at 13 (citing 40 C.F.R. § 86.082–28(a)).

11. Specifically the Deteriorated Emissions Test takes account of the deterioration factor or amount of projected emissions degradation over the vehicle's 50,000-mile useful life as follows:

> For each vehicle, the effect the waiver fuel or fuel additive had on emissions is determined. This incremental effect, either positive or negative, is added to the 50,000-mile certification emission value of the certification emission vehicle which the test vehicle represented. This incremental 50,000-mile emission value is compared to emission standards to determine if it did or did not exceed the standards. Either a pass or fail is assigned accordingly. The pass/fail results are analyzed using a one-sided sign test.

Petrocoal Waiver, 46 Fed.Reg. at 48,978.

12. We note that there are exceptions to the 50,000-mile testing requirement with respect to vehicle certification pursuant to section 206 of the Act. *See* 40 C.F.R. § 86.081–13 (1984) (alternate durability program); *id.* § 86.082–14 (1984) (exception for small volume manufacturers).

and sufficient means of evaluation in lieu of actual 50,000-mile testing.

[6] In the present case, however, we are compelled to find that the Administrator apparently lacked any rational basis for concluding that Petrocoal will not cause or contribute to a vehicle's failure to comply with emission standards over its useful life. The Administrator's stated rationale for concluding that Petrocoal will have only an instantaneous, not deteriorative, effect on emissions, simply fails to withstand careful scrutiny. Moreover, even if we accepted the validity of this conclusion, Petrocoal failed—albeit marginally—the Deteriorated Emissions Test performed in lieu of 50,000-mile testing. *See infra* section III–B. Under these circumstances, we have no doubt that the EPA abused its discretion in determining that Petrocoal will not cause a vehicle to exceed the emission standards over its useful life.[13]

The Administrator's stated rationale for concluding that 50,000-mile durability testing was unnecessary for Petrocoal rests entirely on three prior waiver decisions:

> Experience with other oxygenated hydrocarbon additives similar to the alcohols contained in Petrocoal has led EPA to believe that only an instantaneous emission effect should be observed with Petrocoal.

Petrocoal Waiver, 46 Fed.Reg. at 48,977 & n. 6 (citing waiver decisions for TBA, 44 Fed.Reg. 10,530 (1979), MTBE, 44 Fed.Reg. 12,242 (1979), and Oxinal, 44 Fed.Reg. 37,074 (1979)). The sufficiency of this rationale turns on whether the reasoning and data supporting the three cited waivers can be generalized to reasonably support a conclusion that Petrocoal will have only instantaneous, not deteriorative, emission effects thus obviating the need for 50,000-mile testing. Upon a review of the three waiver decisions, we conclude that they fail either singularly or in combination to provide a reasonably sufficient basis for the EPA's conclusion.

In the TBA waiver decision, the EPA granted ARCO a waiver for a fuel additive, Arconol, in a concentration of 0 to 7 volume percent, which consists primarily of tertiary butyl alcohol (TBA). *See* TBA Waiver, 44 Fed.Reg. at 10,530 & n. 2. No 50,000-mile durability testing was conducted. The EPA concluded that back-to-back testing would provide a reasonable estimate of a vehicle's emission performance on Arconol based upon an examination of the available data on materials compatibility[14] and the chemistry of Arconol. *Id.* at 10,531 & n. 9. The EPA further noted that ARCO had been "using up to 5% Arconol since 1970 and up to 7% since 1974 without apparent material compatibility problems. Therefore, the vehicle manufacturers should have already accommodated for Arconol in their design." *Id.* at 10,532 n. 16.

In the MTBE waiver decision, the EPA granted ARCO a waiver for methyl tertiary butyl ether (MTBE) in a concentration range of 0 to 7 volume percent. *See* MTBE Waiver, 44 Fed.Reg. at 12,243. As in the TBA waiver, the EPA determined that 50,000-mile durability testing was unnecessary based upon an examination of the available data on materials compatibility and the chemistry of MTBE. *Id.* at n. 10. The EPA's conclusion here that 50,000-mile test data should not be required was, however, supported by limited durability data. *Id.* at 12,244 n. 11. Specifically the EPA referenced a limited durability test program conducted by Texaco using six vehicles, each of which accumulated 20,000 miles on a dynamometer.

13. Given our conclusion in this case that the Administrator lacked a rational basis for determining that Petrocoal will not cause a vehicle to fail to comply with emission standards over its useful life, we find it unnecessary to speculate about the precise circumstances in which the EPA might permissibly conclude that a waiver could be granted on the basis of back-to-back testing in the absence of any 50,000-mile durability data.

14. Materials compatibility testing refers to testing conducted to determine the potential deteriorative effects of a fuel or fuel additive on the materials used in fuel and emission control systems.

Finally in the Oxinal waiver decision, the EPA granted Sun Petroleum Products Company a waiver for a proprietary oxygenated hydrocarbon fuel additive which provides no more than two percent oxygen in the fuel. Oxinal Waiver, 44 Fed.Reg. at 37,074. At the time of the waiver grant, the composition of Oxinal was kept confidential. The waiver was predicated, *inter alia*, upon the condition that the Administrator could revoke the waiver based on new data submitted after the public disclosure of Oxinal's chemical composition. *Id.* A subsequent disclosure notice revealed that Oxinal was comprised of a maximum of 2.75 percent by volume of TBA and 2.75 percent by volume of methanol. *See* 45 Fed.Reg. 9766 (1980) (notice of disclosure of chemical composition of fuel additive); *see also* 45 Fed.Reg. 75,755 (1980) (denial of petition to revoke waiver following disclosure of chemical composition). This is the only cited waiver decision which contained methanol, the principal alcohol used in Petrocoal. Once again the EPA concluded, based upon an examination of the available materials compatibility data and the chemistry of the fuel additive, that 50,000-mile durability data testing was not required. *See* Oxinal Waiver, 44 Fed.Reg. at 37,076 & n. 10. The EPA also noted that limited durability test data (one vehicle tested at the end of 20,000 miles) supported its conclusion. *Id.* at n. 11.

While we intimate no opinion as to the propriety of the EPA's conclusion that 50,000-mile durability testing was not essential in these three waiver decisions, we find the EPA's bootstrap approach of relying on them to support a conclusion that 50,000-mile testing was likewise not required for Petrocoal extremely troubling. Not only were the TBA, MTBE, and Oxinal waiver decisions themselves predicated on a conclusion that 50,000-mile testing was unnecessary but this conclusion in each case was purportedly based on an evaluation of the materials compatibility data available on and the chemical composition of the *particular* fuel or fuel additive at issue.[15] Out of the three, only Oxinal contained methanol, the principal alcohol in Petrocoal, and it contained only 2.75 percent by volume methanol whereas Petrocoal may contain up to 12 percent by volume methanol.[16] We find this factor particularly telling given the well-recognized special concerns raised specifically with respect to the potential adverse deteriorative effects of using methanol/gasoline blend fuels. *See generally* J. Keller, G. Nakaguchi, & J. Ware, Final Report: Methanol Fuel Modification for Highway Vehicle Use, Prepared for U.S. Dep't of Energy (HCP/W3683-18) (July 1978).[17]

15. We note that in determining that 50,000-mile durability testing was not essential to the Petrocoal waiver, the EPA did not similarly purport to rely on an evaluation of the materials compatibility data available with respect to Petrocoal. Given the Administrator's departure from the established practice of citing to the materials compatibility data on the fuel at issue and the nature of the materials compatibility data on Petrocoal, *see infra* section III-D, we decline to infer that the Administrator relied on this data in concluding that 50,000-mile durability testing was unnecessary. *See infra* note 20.

16. Petrocoal also has an oxygen content of between 7 and 7½ percent which is considerably greater than that of other fuels for which the EPA has granted section 211(f)(4) waivers (*e.g.*, the Oxinol waiver was conditioned on a maximum allowable oxygen content of 2 percent). The EPA has specifically recognized in a prior waiver decision that:

> [D]riveability may be a problem at higher concentrations of methanol because of the increased oxygen content of the fuel. As oxygen content increases, the air/fuel ratio shifts outside the design specifications (enleanment).

Denial of Beker Industries, Inc.'s Application for a Fuel Additive Waiver, 45 Fed.Reg. 26,122, 26,134 (1980). The EPA has also noted "[e]xperience with other waivers [has] demonstrated that increases in emissions, particularly oxides of nitrogen and evaporative hydrocarbons, were proportional to oxygen content." *See* Grant of Application for a Fuel Waiver Submitted by Atlantic Richfield Company (ARCO)—Decision of the Administrator, at 6 (Nov. 7, 1981) (granting waiver for a methanol blend fuel provided that the maximum oxygen content allowable is 3.5 percent), *reprinted in* Brief for MVMA, Appendix N.

17. We note that in July 1983, the EPA issued a notice in the *Federal Register* announcing that it would hold a public workshop on methanol/unleaded gasoline blends with the purpose of help-

Indeed, at the time the EPA granted the Petrocoal waiver, it had denied two previous waiver applications for methanol fuel additives. *See* Denial of Conservation Consultants of New England, Inc.'s ("Conservation") Application for a Fuel Additive Waiver, 45 Fed.Reg. 53,861 (1980); Denial of Beker Industries, Inc.'s ("Beker") Application for a Fuel Additive Waiver, 45 Fed. Reg. 26,122 (1980).[18] Particularly relevant is the EPA's general characterization and recognition of the potential problems associated with methanol/gasoline blends set forth in the Beker decision:

> To summarize, the various data on methanol/gasoline mixtures are not encouraging. Generally such mixtures exhibit only slight effects on tailpipe exhaust emissions, but they generally appear to have appreciably greater evaporative emissions than gasoline. This is because of the higher volatility of fuels containing a significant amount (approximately 10%) of methanol. Methanol/gasoline mixtures are also more chemically active than gasoline because of the methanol. Thus, such mixtures may exhibit materials compatibility problems. Finally, driveability may be a problem at higher concentrations of methanol because of the increased oxygen content of the fuel....
>
> These observations on methanol/gasoline fuels. [sic] ... are not intended as final judgments concerning methanol, but to highlight EPA's concerns about methanol/gasoline fuels[. A waiver request for such methanol/gasoline fuels] will have to be supported by sufficient data to overcome the existing data which suggest that methanol/gasoline mixtures may cause or contribute to a failure of vehicles to comply with emission standards over their useful life.

Beker Waiver, 45 Fed.Reg. at 26,124.

In the context of evaluating the Petrocoal waiver request, a technical report was prepared which reviewed the available literature on the compatibility effects of methanol/gasoline blends containing 10–15 percent methanol, with special attention to the beneficial effects of inhibitors and four-carbon ("C–4") alcohols in compensating for the adverse effects of methanol. *See* R. Garbe, Technical Report: A Review of the Compatibility of Methanol/Gasoline Blends with Motor Vehicle Fuel Systems (May 1981), *reprinted in* Brief for MVMA, Appendix I. While not purporting to represent the EPA's final position or to be based on the specific testing of Petrocoal, the report, nonetheless reached the following general conclusion based on a review of data available on methanol/gasoline blends: "[T]here appears to be no available data, either in the published literature or supplied by [American Methyl], which would conclusively demonstrate that Petrocoal would be safe (from an emission control standpoint) to operate in currently available motor vehicles over long time periods." *Id.* at 4. The report recommended that emissions durability to 50,000 miles should be demonstrated. *Id.* In the Petrocoal waiver decision itself, although con-

ing the EPA to "assess the meaning of existing data and to better understand the concerns that may exist regarding the use of such blends and the basis for these concerns." *See* 48 Fed.Reg. 32,075 (1983).

18. Beker requested a waiver for crude methanol in unleaded gasoline from 0 to 15 percent by volume. Conservation requested a waiver for a one-to-one mixture of methanol and ethanol at 10 percent by volume (*i.e.*, 5 percent methanol and 5 percent ethanol) to be blended with 90 percent, by volume, unleaded gasoline. While in both decisions, the EPA did state generally that "[e]xperience with other oxygenated hydrocarbon additives leads EPA to believe that [the mixture at issue] would probably have an instantaneous effect [on emissions]," it gave no citation to any other waiver decision or supporting data. *See* Conservation Waiver, 45 Fed.Reg. at 53,862 n. 3; Beker Waiver, 45 Fed.Reg. at 26,123 n. 2. Moreover, the EPA qualified this conclusion in both decisions stating: "The ... mixture may also exhibit long-term deteriorative effects on fuel system components. Therefore any future waiver application should be supported with materials compatibility testing." *Id.* Both applications were denied on the ground that the applicant failed to submit sufficient data to establish that the methanol/gasoline blend would not cause or contribute to a vehicle's failure to meet emission standards over its useful life.

cluding 50,000-mile durability testing unnecessary, the EPA equivocated stating:

> In reviewing future waiver applications for fuel containing high percentages of methanol without the presence of cosolvents and special inhibitors some long-term durability testing may be [required].

Petrocoal Waiver, 46 Fed.Reg. at 48,977 (footnote omitted). The EPA further said that such a determination would have to be made on a case-by-case basis. *Id.* at n. 9.

[7] As the foregoing discussion of the three waiver decisions and the special concerns raised about methanol blends amply illustrates, the TBA, MTBE, and Oxinal waiver decisions can in no way be construed to provide a reasonable basis for the EPA's conclusion that Petrocoal—a fuel containing up to 12 percent methanol—would have only instantaneous, not deteriorative, effects. The presence of undisclosed special inhibitors and cosolvents in Petrocoal does not change this conclusion. The effectiveness of the additives at preventing any potential deteriorative effects resulting from the use of a methanol blend fuel similar to Petrocoal was neither at issue nor established by the three cited waiver decisions. *Cf. infra* p. 401 (discussing relevance of proprietary inhibitor with respect to materials compatibility).

III. Analysis of the Test Data Submitted on Petrocoal

We now turn to petitioners' challenges to the sufficiency of the emissions data which was submitted on Petrocoal and the reasonableness of the EPA's determination, based upon its evaluation of the data, that Petrocoal will not cause or contribute to a vehicle's failure to meet the applicable emission standards over its useful life.

A. *Maximum Concentration Limits Are Not Supported in the Record*

The EPA determined that American Methyl had met the burden established by section 211(f)(4) to qualify for a waiver "provided the concentration of methanol in the finished fuel does not exceed 12 percent, by volume, the concentration of total alcohols in the fuel does not exceed 15 percent, by volume, the ratio of methanol to four-carbon alcohols in the finished fuel does not exceed 6.5 to 1 by volume...." Petrocoal Waiver, 46 Fed.Reg. at 48,976. Petitioners, however, contend that the record is inconclusive as to whether this maximum concentration fuel was ever tested. *See* Brief for MVMA at 34.[19] The EPA in its brief concedes that "the record does not appear to support these limits," and asks the court for a remand in order to reconsider the appropriate limits. Brief for EPA at 15; *see also id.* at 16 ("the record does not appear to support key elements of the waiver"). While we agree with intervenor American Methyl's assertion that we are not bound by the EPA's concession but may make our own independent judgment as to whether the concession is warranted, our own review has uncovered nothing which persuades us that the EPA's concession is unwarranted.[20]

19. American Methyl argues that this court has previously stated that it would uphold an EPA decision setting a numerical standard so long as the standard selected was within a "zone of reasonableness" and was properly explained. *See* Brief for American Methyl at 51 (citing *Small Refiners*, 705 F.2d at 525). We find this argument unpersuasive. First, the maximum concentration levels set by the EPA were not properly explained in this case. Second, the EPA's guidelines for section 211(f)(4) waivers for alcohol-gasoline blends specifically state:

> [E]missions performance may be critically dependent upon its concentration in use. Data submitted should encompass the range of concentrations intended for use. No attempt by EPA to extrapolate data to a permissible concentration level is contemplated.

Guidelines for Section 211(f) Waivers for Alcohol-Gasoline Blends, 43 Fed.Reg. 24,131, 24,132 (1978).

20. Intervenor American Methyl attempts in its brief to rationalize the Administrator's decision by providing reasons and analysis not stated in the decision. *See, e.g.*, Brief for American Methyl at 50–55. American Methyl argues that although the Administrator may not have fully articulated her path of analysis, the court may uphold the agency if that path can reasonably be discerned from the record. *See id.* at 53 (citing *Bowman Trans., Inc. v. Arkansas-Best Freight Sys., Inc.*, 419 U.S. 281, 286, 95 S.Ct. 438,

Emissions data on Petrocoal were provided from three sources. *See* Characterization Report—Anafuel Unlimited, J.A. at 232, 233–34. American Methyl, in support of its waiver request for the use of Petrocoal, submitted back-to-back Federal Test Procedure (FTP) data on eight 1970 or later model year light duty vehicles. General Motors tested four 1980 or later model year vehicles using samples supplied by American Methyl containing 10 percent total alcohols. The EPA's Office of Mobile Source Air Pollution arranged for testing of four 1979 and later model year vehicles using samples supplied by American Methyl containing 13 percent total alcohols.

It is uncontested that neither the fuel tested by GM nor by the EPA contained the maximum concentration limits of total alcohols or the maximum percentage ratio of methanol to C–4 alcohols allowed by the waiver. Whether the fuel tested by American Methyl contained the maximum concentrations is a matter of controversy. American Methyl's waiver application reported that the fuel it tested contained "15% of [American Methyl's] proprietary oxygenated hydrocarbon." Anafuel Unlimited, Application for Waiver (Feb. 20, 1981), J.A. at 1, 6. No other information, such as the ratio of methanol to C–4 alcohols, is provided. GM in its comments raised the issue that American Methyl had informed GM that the additive contained non-alcohol as well as alcohol hydrocarbons, thus GM asserted that the fuel tested by American Methyl may have contained a total alcohol content of less than 15 percent. *See* Comments of General Motors Corporation on the Anafuel Unlimited Application for a Fuel Additive Waiver (July 6, 1981) ("GM Comments"), J.A. at 121, 124, 127, 132. This issue was not addressed in the Administrator's decision. The EPA now concedes that its "conclusion that the Petrocoal samples tested by [American Methyl] contained 15% alcohol [citing the Characterization Report, J.A. at 234–35] might have been in error." Brief for EPA at 15 n. 21. We find no clear and unequivocal verification in the record that the fuel tested by American Methyl contained the maximum concentration levels or percentage ratio permitted by the waiver.[21] Hence, as the EPA concedes, the record does not support the maximum limits allowed by the waiver. Moreover, the fact the "worst case" fuel might not have been tested casts doubt on the confidence we may place in any of the test results on Petrocoal cited to support the waiver decision.

American Methyl filed a supplemental brief in this case asserting that we should reject the EPA's concession that the record does not support the maximum alcohol limits and percentage ratio specified in the waiver because this court determined in *American Methyl* that this very concession was a "make-weight" and "red herring." *See* Supplemental Brief for Intervenor American Methyl at 5–9. We find that the court's statements in *American Methyl* are limited to the context of that case and have no bearing on the validity of the EPA's representations regarding the state of the record evidence supporting the original waiver decision for Petrocoal.

In *American Methyl*, this court held that the EPA had no inherent authority to re-

442, 42 L.Ed.2d 447 (1974); *Small Refiners*, 705 F.2d at 533–34). While this court may indeed adopt such a course of action in appropriate cases, this is not one. The evidence in the record and the Administrator's decision are simply not of the nature which would warrant this court attributing to the Administrator reasons not even hinted at in the decision. In *Small Refiners*, 705 F.2d at 533–34, we recognized the settled rule that neither the courts nor counsel may provide new or substitute reasons for the agency's action; we, however, noted:

> [T]his is not a case where EPA failed to give any reasons or gave unsupported reasons for its belief.... Rather, EPA merely failed to articulate its reasons in any detail....

Id.

21. We note that even if American Methyl's blend did contain the maximum concentrations permitted by the waiver, its emissions data standing alone would have counseled denial of the waiver. When the Deteriorated Emissions Test was applied to the data submitted on the eight vehicles tested by American Methyl, Petrocoal failed the test for both tailpipe hydrocarbons and oxides of nitrogen. Characterization Report, J.A. at 240; *see infra* section III–B.

consider or revoke a waiver under section 211(f)(4) but must instead proceed to prohibit or regulate the fuel under section 211(c). *American Methyl*, 749 F.2d at 831. The court explicitly stated that the issue of the validity of the original waiver was not before the court. *Id.* at 837. In *American Methyl*, the EPA conceded that it could not revoke a waiver under section 211(f)(4) if correctly granted, but argued that it could revoke a waiver under section 211(f)(4) if, upon re-examination, the record was found insufficient to support the waiver. *Id.* Accordingly, the EPA asserted that the Petrocoal waiver was not correctly granted initially because the maximum alcohol levels and percentage ratio were not supported in the record.[22] The court determined, however, that the EPA's actions and the chronology of events leading up to the proposed revocation demonstrated that the EPA's real impetus for initiating the proposed revocation was new evidence relating to Petrocoal's effect on evaporative emissions of hydrocarbons and not any purported defects in the original waiver. *Id.* The court then went on to characterize the EPA's assertion of deficiencies in the record supporting the original waiver grant as "make-weights" and "red herrings." *Id.* at 837–38. Contrary to American Methyl's contention, however, the court characterized the EPA's claims that it sought revocation due to the incorrectness of the original waiver as "make-weights" and "red herrings," not because the claims *per se* lacked merit, but because they lacked merit as purported reasons for the proposed revocation proceeding.

The court's purpose in discussing the relevant issues in *American Methyl* was to demonstrate that since the proposed revocation was motivated by *new evidence*, not *past error*, the revocation would be unwarranted even on the EPA's own view of the statute. *Id.* at 838 ("EPA's primary reason for revoking American Methyl's waiver does not relate to a defect in the original grant; thus under the EPA's own interpretation of its powers, a revocation proceeding is not warranted in this case."). This finding was clearly not essential to the court's decision, since the court held that the EPA had no authority to revoke a waiver pursuant to section 211(f) regardless of whether or not the waiver was correctly granted in the first instance. In sum, we find that the dicta in *American Methyl* cited by intervenor American Methyl has no bearing on our evaluation of whether the maximum alcohol levels and percentage ratio specified in the Petrocoal waiver are supported by the record.

B. *Petrocoal Failed the Deteriorated Emissions Test for NO_x Emissions*

Having determined that Petrocoal was expected to have an instantaneous effect on emissions, the EPA analyzed the emissions data on Petrocoal using the Paired Difference Test, the Sign of the Difference Test, and the Deteriorated Emissions Test. *See supra* note 9. All three tests examine the emissions effect of the waiver fuel with respect to the following pollutants: hydrocarbon (HC), carbon monoxide (CO), and oxides of nitrogen (NO_x). The EPA reported the test results on the combined data from the eight vehicles tested by American Methyl, the four vehicles tested by GM, and the four vehicles tested by the EPA.

As discussed earlier, the Deteriorated Emissions Test is the test used in lieu of 50,000-mile durability data to determine whether the waiver fuel will cause a vehicle to fail to meet the applicable emission

22. In its notice soliciting comments on whether to reconsider the Petrocoal waiver, the EPA stated that

> information indicates that the fuel tested by the applicant and provided by the applicant to the Agency and to General Motors Corporation for testing, may not have been the fuel described in the waiver request.

48 Fed.Reg. 19,779, 19,780 (1983). In its notice of proposed revocation, the EPA concluded: Thus, the total alcohol, in one case might have reached 15% but some ambiguity still remains. It appears clear, however, that the highest ratio of methanol to butanol was 4.5 to 1, not 6.5 to 1.

49 Fed.Reg. 11,879, 11,884 (1984).

standards over its useful life.[23] *See supra* note 11 (describing test). The number of vehicles whose projected 50,000-mile emission values exceeded the applicable emission standards using Petrocoal were:

HC .....1 out of 16
CO.....1 out of 16
NO_x .....2 out of 16

Petrocoal Waiver, 46 Fed.Reg. at 48,978. The Deteriorated Emissions Test is designed to provide a 90 percent probability of failure of the test if 25 percent or more of the vehicle fleet tested would fail to meet emission standards using the waiver fuel or fuel additive. *Id.* For a sample of 16, as here, the failure of two or more vehicles to meet the emission standards constitutes a failure of the test. *Id.* at 48,979. Thus, Petrocoal failed the Deteriorated Emissions Test for No_x emissions.

[8] The Administrator acknowledged Petrocoal's failure for NO_x emissions but nevertheless granted the waiver stating:

> In this case, Petrocoal just fails (by one vehicle) this Test for NO_x. Nevertheless, because the failure was borderline, i.e., small changes to the test criteria would result in a pass, coupled with the small increase in NO_x emissions found in Test 1, I conclude that this problem is not significant enough to warrant a disapproval of the waiver request. In reaching this conclusion, I considered all the information before me including the EEA report submitted by Anafuel.

Id. Hence, although the EPA has established specific statistical criteria for determining whether a fuel will cause a vehicle to exceed emission standards, the Administrator determined that it was appropriate to deviate from those criteria and grant a waiver for Petrocoal despite its clear failure of the Deteriorated Emissions Test for No_x emissions. As far as we know, based on the information supplied by the parties and our own research, the EPA has never before granted a waiver in spite of a fuel's failure to pass the Deteriorated Emissions Test. Indeed, given the straightforward nature of the Deteriorated Emissions Test coupled with the fact that the test itself is conducted in lieu of actual 50,000-mile durability data, based on the *a priori* assumption that the fuel will have only an instantaneous effect, we find it difficult to conceive of any circumstances which would justify deviating from the established criteria.[24] While we do not totally reject the possibility that the Administrator might in some other instance be able to articulate a reasoned explanation for deviating from the established criteria, she certainly has not done so in this case. At oral argument, even the EPA, while arguing that the Administrator could deviate from the established criteria given a reasoned explanation, conceded that the Administrator gave no such reasoned explanation in this case.

The EPA's criteria provide specific cutoff points based on sample size for determining whether a fuel will cause a vehicle to exceed emission standards for each pollutant. The fact that Petrocoal failed for NO_x emissions on the basis of the minimum number of vehicles constituting a failure (*i.e.*, 2 out of 16) and thus "small changes to the test criteria would result in a pass," *id.*, does not in our view provide any reasoned explanation for why this failure—albeit marginal—should not be regarded as a failure. There is no question that if the test criteria were changed, Petrocoal could

23. The EPA further indicates that the Deteriorated Emissions Test is especially useful because it measures the emissions effect of the waiver fuel with respect to each vehicle:

> It is useful to perform this analysis even if the first two analyses indicate the waiver fuel or fuel additive has no adverse effect. The analysis indicates whether the emissions from any particular type of vehicles or special emission control technologies are uniquely sensitive to the waiver fuel or fuel additive, thus causing vehicles to fail to meet emission standards. This effect could be masked in the previous analyses which consider the emissions results as a group without distinguishing the emissions impact on subgroups.

Petrocoal Waiver, 46 Fed.Reg. at 48,978.

24. This is especially true in the present case where at least half the sample of vehicles tested, and possibly all, were not tested on the "worst case" fuel allowed by the waiver. *See supra* p. 397.

pass the test. The question is why a special exception should be made to accommodate Petrocoal's failure under the established test criteria. Equally unavailing is the Administrator's notation that the Paired Difference Test indicated only a small increase in NO_x emissions. The point of the Deteriorated Emissions Test is to project, in the absence of actual 50,000-mile durability data indicating the emissions degradation resulting over the vehicle's useful life, whether the identified increase due to the use of Petrocoal will cause the vehicle to exceed emission standards at any point during its useful life. In sum, we find that the Administrator has failed to articulate any plausible reason why the established test criteria do not accurately reflect the emissions effects due to Petrocoal.[25]

The EPA may not grant a section 211(f)(4) waiver unless the applicant has established that the fuel will not cause or contribute to the failure of any emission control device to achieve compliance with emission standards over the useful life of the vehicle. *See supra* p. 390. The EPA's alcohol-gasoline waiver guidelines expressly state: "Where the potential for such harm is evidenced, the applicant has the burden of proving that such harm will not occur." Guidelines for Section 211(f)(4) Waivers for Alcohol-Gasoline Blends, 43 Fed.Reg. at 24,132. Certainly, Petrocoal's failure for NO_x emissions indicates a potential for harmful emission effects absent some reasoned explanation to the contrary. The Administrator may not simply subjectively without a reasoned explanation conclude that a failure of the EPA's established criteria is not significant. Section 211(f)(4) speaks in terms of "a failure" to achieve compliance with the emission standards. We find nothing in the Act or its legislative history to support the Administrator's added gloss that the relevant question is whether the fuel will cause or contribute to a "significant failure." *See* Petrocoal Waiver, 46 Fed.Reg. at 48,977. We conclude that on the record in this case the Administrator acted arbitrarily, capriciously, and abused her discretion in granting the Petrocoal waiver despite Petrocoal's failure of the Deteriorated Emissions Test for NO_x emissions.

C. *Evaporative Emissions*

[9] The petitioners also contend that the Administrator's conclusion that the increased evaporative emissions caused by Petrocoal could be controlled by controlling the volatility of the blended fuel was arbitrary and capricious. *See* Brief for MVMA at 45. The Administrator, in the Petrocoal waiver decision, stated that the relationship

25. The Administrator further stated that she considered all the information before her including "the EEA Report" submitted by American Methyl. Petrocoal Waiver, 46 Fed.Reg. at 48,978. The "EEA Report" cited is a report prepared for American Methyl by Energy and Environmental Analysis ("EEA"). EEA, utilizing *its own methodology*, concluded that Petrocoal satisfied the waiver conditions related to its impact on tailpipe emissions. *See* Energy and Environmental Analysis, Analysis of Emissions Data from Vehicles Tested with Petrocoal (Sept. 8, 1981), J.A. at 161, 163. In choosing to apply a different statistical test to evaluate the emissions data on Petrocoal, the EEA stated:

> The small sample of cars tested, the variation in baseline fuels and Petrocoal blends used, and the differences in emission control technologies within the sample of cars tested are factors that detract from the significance of EPA's analysis. In addition, EPA's Deteriorated Emissions Test is of questionable validity, since it judges compliance with emission standards by adding the incremental emissions (between vehicles fueled with baseline fuel and Petrocoal) obtained from tests on production cars to emissions prototype certification cars fueled with Indolene. A more statistically and technically valid test is to add *average* incremental emissions for the test fleet to the *average* emissions for equivalent certification cars ... and check for compliance with the standard.

Id. at 163. Whatever the merits of the EEA's conclusions, the Administrator's mere statement that she *considered* the report does not constitute a *reasoned explanation* of what factors or circumstances the Administrator relied on as justification for her deviation from the established criteria in the case of Petrocoal. Indeed, the EEA report may be viewed as casting doubt on the reliability and sufficiency of the emissions data available on Petrocoal as well as questioning the *per se* validity of the EPA's Deteriorated Emissions Test.

between fuel volatility characteristics (primarily the Front End Volatility Index (FEVI)) and evaporative emissions had been clearly established for fuels composed entirely of hydrocarbon components and had been demonstrated to apply for fuels containing "some relatively small percentages of the oxygenated hydrocarbons" TBA, MTBE and Oxinal. Petrocoal Waiver, 46 Fed.Reg. at 48,977. Although noting that the data available on Petrocoal at the higher percentages of alcohol was incomplete, the Administrator concluded that the relationship between fuel volatility and evaporative emissions appeared to hold for Petrocoal based on the data in the record with respect to Petrocoal's FEVI and evaporative emissions.

The Administrator in past waiver decisions has consistently relied on the assumption that fuel volatility restrictions will adequately control evaporative emission increases; generally, however, the assumption has been supported by at least some confirmatory test data on the fuel at issue. *See, e.g.*, Oxinal Waiver, 44 Fed.Reg. at 37,076; MTBE Waiver, 44 Fed.Reg. at 12,245; TBA Waiver, 44 Fed.Reg. at 10,532. While we harbor some doubts as to the wisdom of the Administrator's application of this assumption in the specific case of Petrocoal with its higher methanol, total alcohol, and oxygen content, we decline to find the Administrator's action arbitrary and capricious. The data cited by MVMA indicating that controlling volatility will not solve the evaporative emissions problem caused by Petrocoal was submitted as a supplement to MVMA's petition for administrative reconsideration. *See* Brief for MVMA at 48 & n. 38. While this new data may indicate that the Administrator's reliance on the assumed relationship between fuel volatility and evaporative emissions was in error, this evidence was not in the record at the time the waiver was granted, and thus we will not rely on it to undercut the Administrator's conclusions on review. *See American Petroleum Inst. v. Costle*, 665 F.2d 1176, 1186 n. 3 (D.C.Cir.1981), *cert. denied*, 455 U.S. 1034, 102 S.Ct. 1737, 72 L.Ed.2d 152 (1982).

D. *Materials Compatibility and Driveability*

Finally, petitioners argue that the Administrator erred in concluding that Petrocoal does not present materials compatibility or driveability problems. *See* Brief for MVMA at 49–56. The Administrator observes in the Petrocoal waiver decision that both materials compatibility and driveability are important criteria in evaluating a waiver request. *See* Petrocoal Waiver, 46 Fed.Reg. at 48,977. "Materials incompatibility can contribute or cause the failure of vehicles to meet either their exhaust or evaporative emission standards ... because a fuel ... may cause changes in the components in carburetors or fuel systems which exceed the tolerances specified by the manufacturer." *Id.* "Driveability information is important because poor driveability can directly result in increased emissions due to constant misfires and repeated stalling, and possibly lead to tampering with the emission controls of the vehicle." *Id.* The Administrator concluded that based on the information developed in the record that Petrocoal presented neither materials compatibility problems nor significant driveability problems affecting emissions.

Since we have already found on the basis of petitioners' other challenges that the Administrator acted arbitrarily, capriciously, and abused her discretion in granting the Petrocoal waiver, we find it unnecessary to determine expressly whether the Administrator also acted arbitrarily and capriciously in concluding that Petrocoal resulted in no significant materials compatibility or driveability problems.[26] We are compelled, however, to express our doubts about the adequacy of the Administrator's findings with respect to materials compatibility problems. The EPA, itself, has recognized that materials compatibility is a particularly salient concern with methanol

26. We likewise find it unnecessary to address petitioners' contentions that the Administrator erred by failing to consider the phase separation problems associated with Petrocoal.

blends. *See supra* p. 394. Yet, the record data on materials compatibility problems associated with Petrocoal is rendered suspect by the lack of any unequivocal evidence that the effects of the "worst case" fuel allowed by the waiver were ever tested. *See supra* p. 397. Nor do we find the mere presence in Petrocoal of a proprietary inhibitor, which purportedly inhibits materials compatibility problems, a sufficient basis for concluding that materials compatibility will not be a problem in the absence of data supporting the actual effectiveness of the inhibitor.[27]

IV. Conclusion

For the foregoing reasons, we find that the Administrator acted arbitrarily, capriciously, and abused her discretion in granting the Petrocoal waiver. We have addressed the EPA's and American Methyl's principal arguments in support of the waiver; any arguments not specifically addressed herein were duly considered and found unpersuasive. Accordingly, we vacate the Administrator's decision granting a waiver for Petrocoal, and remand to the EPA for further proceedings consistent with this decision. While we doubt that it is possible for the Administrator to make a reasoned decision to grant the Petrocoal waiver on the basis of the existing record, we, nonetheless, remand to the agency to make this determination.[28] Should the Administrator conclude that the existing record does not contain sufficient data to support a section 211(f)(4) waiver for Petrocoal, American Methyl remains free to rehabilitate the administrative record by reapplying for a waiver with additional data on the emission effects of Petrocoal.

It is so ordered.

Frederick C. STACEY, Appellant

v.

ALLIED STORES CORPORATION.

No. 84-5199.

United States Court of Appeals, District of Columbia Circuit.

Argued March 11, 1985.

Decided July 26, 1985.

Terminated employee filed age discrimination in employment action. The United

27. We note that the Administrator's decision does refer to the materials compatibility data submitted by American Methyl. The Administrator states:

> [American Methyl] performed immersion tests on several metallic parts and elastomeric parts commonly found in carburetors and full systems. The results from [American Methyl's] testing indicated that the corrosion of metallic parts due to Petrocoal would be no worse than that of gasoline. The results for the elastomeric parts indicated that while some components changed in characteristics such changes were not significantly different than those with gasoline.

Petrocoal Waiver, 46 Fed.Reg. at 48,977. Comments from GM, however, pointed out not only that it was unclear whether any tests had been run using the "worst case" fuel permitted but also several other shortcomings in the tests. According to GM, American Methyl erred in identifying certain materials used in some fuel system components and conducted all of its tests at room temperature despite the recognized fact that temperature can be a factor in the corrosion of metals. GM Comments, J.A. at 145–46. GM conducted its own materials compatibility testing with Petrocoal and concluded:

> These short-term laboratory tests have indicated that Petrocoal should not cause rapid, catastrophic failures of the elastomers which were tested. However, *they do suggest that there is a potential for problems related to the large volume swell of nitrile rubber.*

Id. at 144 (emphasis in original). GM further noted that it believed its Petrocoal contained a 2:1 ratio of methanol to butyl alcohols and that a higher ratio "could be more detrimental in certain areas such as evaporative emissions and materials compatibility." *Id.* at 147. The Administrator fails to address any of these concerns.

28. Contrary to American Methyl's contentions, nothing in our decision in *American Methyl* or in section 211(f)(5), 42 U.S.C. § 7545(f)(5), prohibiting a stay of the EPA's action under section 211(f) *pending* judicial review precludes us from remanding this proceeding to the EPA.